REMARKS

Applicant wishes to thank the Examiner for considering the present application. In the Final Office Action dated November 29, 2006, Claims 1-8, 11, 12, 15-18, and 21-31 are pending in the application. Applicant respectfully requests the Examiner for a reconsideration.

Claims 1 and 3-5 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Hammill et al.* (6,173,178) in view of *Floury et al.* (5,963,845) and *Siwiak* (5,640,166). Applicant respectfully traverses.

Claim 1 is directed to a system 300 that is generally illustrated in Figure 1. The preamble of claim 1 is directed to a system 300 for providing high frequency data communications in a satellite-based communication network 306. The system 300 includes a plurality of communication satellites 302, each having uplink 314 and downlink antennas 316 capable of receiving and transmitting a plurality of signals. Each of the satellites 302 has a communication control circuit 318. The general satellite system 300, the satellites 302 and the network 306 are described in the paragraph bridging pages 4 and 5. A communication control circuit is described in the last two paragraphs of page 5.

The system includes at least one of the satellites being a reconfigurable satellite 304. The reconfigurable satellite is first described in the paragraph bridging pages 4 and 5.

The reconfigurable satellite 304 has a programmable frequency synthesizer 340 coupled to an up converter 336 and a down converter 332 is described on lines 13-17 of page 6. The reconfigurable satellite further includes a routing table 372. The routing table 372 stores tuning information therein. The routing table 372 is described on page 8, lines 15-20.

The reconfigurable satellite 304 also includes a controller 342 located on the satellite 304 coupled to the communication control circuit 318. The controller controls a frequency reconfiguration of the communication control circuit 318 through the programmable frequency synthesizer in response to the tuning information. This is described on lines 14-20 of page 8.

The independent claims were amended in the previous Office Action to recite that the frequency range is changed from a first frequency range to a second frequency range using the programmable frequency synthesizer. This was to clarify the claims. Satellites typically operate over a particular frequency range. Different beams use different frequencies within the frequency range to operate so that interference between the beams is not formed. One difference between the present claims and the cited art, as will be described below, is the capability of controlling a frequency reconfiguration of the communication circuit from a first frequency

range to a second frequency range using a programmable frequency synthesizer in response to tuning information from a routing table. This allows the satellite to be reconfigured quickly and conveniently.

The *Hammill* reference is cited for being a reconfigurable satellite on page 2 of the Office Action. It is clear that the tuning information of the present application is used to tune the frequency through the controller. That is, the controller of Claim 1 controls "a frequency reconfiguration of the communication control circuit through the programmable frequency synthesizer." No frequency reconfigurations of beams is set forth. In Col. 4, lines 20-25, state, "A phased array antenna may also be used to generate the beams, and also provides the ability to reconfigure the antenna on the fly to transmit beams of varying sizes." While the size of the beams may be changed, no teaching or suggestion is provided for changing the frequency of the beams in response to a programmable frequency synthesizer and a routing table. In Col. 4, lines 23-25, the *Hammill* reference states "FIGS. 2-7 illustrate the beams of various frequencies and polarizations constituting the projection shown in FIG. 1." Applicant respectfully submits that this also does not teach frequency reconfiguration. As mentioned above, operating beams over a range of frequencies is known. This sentence merely describes a well-known practice and does not describe using a completely different frequency range.

The Examiner then goes on to state that the *Hammill* reference fails to teach the frequency synthesizer, a routing table, and a controller for controlling a frequency reconfiguration. Applicant agrees.

The Examiner then cites the *Floury* reference for teaching a programmable frequency synthesizer. Applicant agrees that a frequency synthesizer adapted to be controlled by a command line from the ground station to the controlled input is set forth.

The Examiner then goes on the state that the *Hammill* and *Floury* references fail to teach a routing table and a controller located on the satellite coupled to said communication control circuit. Applicant agrees. The *Siwiak* reference is cited for this teaching. What is not taught in the *Siwiak* reference is controlling a frequency reconfiguration of the communication control circuit from a first frequency range to a second frequency range. The Examiner cites Table 1 in the *Siwiak* reference for teaching a routing table. The table and the corresponding text is in column 2, line 41 through column 3, line 42. Applicants respectfully submit that the Doppler compensation table illustrated in the *Siwiak* reference is not a routing table. The table merely provides the Doppler frequency value associated with the beam to a frequency synthesizer for

compensating for the Doppler frequency shift associated with the beam being utilized. This is set forth in column 3, lines 22 through 26. A routing table is known in the art for controlling beams. Even if Table 1 is considered a routing table, other differences between the claims and the *Siwiak* references are evident.

The Examiner cites column 2, line 41 through column 3, line 42 and Figure 2 for teaching a controller that controls a frequency reconfiguration of the communication control circuit from a first frequency range to a second frequency range through the programmable frequency synthesizer in response to the tuning information. Applicants respectfully submit that the *Siwiak* reference does not teach or suggest this. As mentioned above, the table is a Doppler shift table. One thing to notice is that the Doppler compensation values are in the kilohertz range. A typical satellite uses frequencies in the gigahertz range. Thus, the kilohertz range is a minor shift. Also, by observing the values in the table, the Doppler compensation values are both positive values and negative values. Some of the beams have the frequency increased while other beams have the frequency decreased. Applicants respectfully submit that the two frequency ranges are not taught or suggested. In fact, because of the positive and negative changes or Doppler shifting values, the same frequency range is generally provided. Thus, two frequency ranges are not taught or suggested. This is further enhanced by the amount of any one of the frequency changes which are all relatively low. Thus, no teaching or suggestion is found in the *Siwiak* reference for a frequency reconfiguration from a first frequency range to a second frequency range through a programmable frequency synthesizer in response to the tuning information from a routing table.

Therefore, because each and every reference fails to at least "said controller controlling a frequency reconfiguration of said communication control circuit from a first frequency range to a second frequency range through said programmable frequency synthesizer in response to tuning information from the routing table," Applicant respectfully requests the Examiner for a reconsideration of the rejection of Claim 1.

Likewise, Claims 3-5 depend from Claim 1 and are also believed to be allowable for at least the same reasons set forth above.

Claim 2 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Hammill* in view of *Floury, Siwiak*, as applied to claim 1 above, and further in view of *Wiswell et al.* (6,205,319).

The *Wiswell* reference also does not teach or suggest the missing limitations of Claim 1. Applicant, therefore, respectfully requests the Examiner to reconsider the rejection of Claim 2.

Claims 6-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Hammill* in view of *Floury, Siwiak* as applied to Claims 1 above, and further in view of *Brown* (6,157,621).

The *Brown* reference also does not teach or suggest the elements missing from claim 1. *Brown* does describe a packet switch, as in claim 7. It only mentions TDMA not the use of a TDMA switch. Applicant, therefore, respectfully requests the Examiner to reconsider this rejection as well.

Claim 8 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Hammill* in view of *Floury, Siwiak* as applied to claim 1 above, and further in view of *Galvin* (6,182,927).

Claim 8 depends from claim 1. The *Galvin* reference does not teach or suggest the elements missing from the *Hammill, Floury,* and *Siwiak* references. Therefore, Applicant respectfully requests the Examiner to reconsider the rejection of claim 8.

Claims 15 and 11-12 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Floury* in view of *Wolcott* (6,317,583) and Siwiak ('166).

Claim 15 is an independent claim and recites "A payload circuit for a satellite comprising: a receive array; a receive beam forming network; a transmit array; a transmit beam forming network; a communications control circuit for controlling communications of said satellite, said communications control circuit being an up converter and a down converter; and a reconfiguration circuit coupled to the communications control circuit for reconfiguring the communications control circuit, said reconfiguration circuit comprising a programmable frequency synthesizer coupled to the up converter and down converter, an on-board computer and a routing table having tuning information stored therein, said on-board computer controlling a reconfiguration of said communications control circuit from a first frequency range to a second frequency range through said programmable frequency synthesizer in response to said tuning information." Claim 15 is similar to Claim 1 in that the reconfiguration circuit comprises a programmable frequency synthesizer coupled to the up converter and down converter and a routing table having tuning information therein. The onboard computer controls the reconfiguration of the communications control circuit through the programmable frequency synthesizer in response to the tuning information. As mentioned above with respect to claim 1, *Floury* and *Siwiak* do not teach or suggest the programmable frequency synthesizer and routing table combination. The *Wolcott* reference is not set forth for these teachings. The *Wolcott* reference also does not teach or suggest these missing elements. Although a selectable frequency is illustrated with respect to a synthesizer, the *Wolcott* reference also does not teach or

suggest a programmable frequency synthesizer in combination with a routing table. Therefore, Claim 15 is also believed to be allowable over the combination of the *Floury*, *Wolcott* and *Siwiak* references.

Claim 11 recites the communication control circuit comprises a transponder and which depends from Claim 15. Claim 12 recites the up converter and down converter and the transponder and depends from Claim 11. Because these claims depend from Claim 15, they are believed to be allowable for at least the reasons set forth above with respect to Claim 15.

Claims 16-17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Floury* in view of *Wolcott, Siwiak*, as applied to claim 15 above, and further in view of Brown (6,157,621). Applicant respectfully traverses.

Claims 16 and 17 depend from claim 15. None of these four references teaches or suggests a controller that controls a frequency reconfiguration from a first frequency range to a second frequency range through the programmable frequency synthesizer in response to the tuning information.

Claims 18 and 28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Floury* in view of *Siwiak* ('166) and *Pizzicaroli et al.* (5,813,634). Applicant respectfully traverses.

Claim 18 is a method claim and recites "reconfiguring the frequency configuration of the payload of the reconfigurable satellite in response to the tuning information in the routing table by changing an up converter frequency and down converter frequency from a first frequency range to a second frequency range using a programmable frequency synthesizer".

Claim 28 is a method claim that recites "storing frequency tuning information in a routing table" and "reconfiguring the frequency configuration of the payload of the reconfigurable satellite in response to the tuning information in the routing table by changing an up converter frequency and down converter frequency from a first frequency range to a second frequency range using a programmable frequency synthesizer."

The *Pizzicaroli* reference also does not teach or suggest reconfiguring the frequency configuration of the payload of the reconfigurable satellite in response to the tuning information or routing table by changing an up converter and a down converter frequency using a reprogrammable frequency synthesizer. Claim 28 is similar to Claims 1 and 15 in that the reconfiguration is performed in response to the tuning information in the routing table. Applicant, therefore, respectfully requests the Examiner to reconsider this rejection as well.

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Claims 21-27 and 29-31 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Floury* in view of *Siwiak* as applied to claims 18, 28 above, and further in view of *Pizzicaroli* ('634) and *Brown* ('621).

As mentioned above, the *Floury*, *Siwiak*, *Pizzicaroli* and *Brown* references do not teach or suggestion reconfiguring the frequency reconfiguration of the payload of the reconfigurable satellite in response to the tuning information in the routing table by changing an up converter frequency and a down converter frequency using a programmable frequency synthesizer. Applicant, therefore, respectfully requests the Examiner to reconsider the rejection of Claims 21-27 and 29-31.

In light of the above amendments and remarks, Applicant submits that all objections and rejections are now overcome. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited. Should the Examiner have any questions or comments which would place the application in better condition for allowance, he is respectfully requested to call the undersigned attorney.

Should any fees be associated with this submission, please charge Deposit Account 50-0383.

Respectfully submitted,
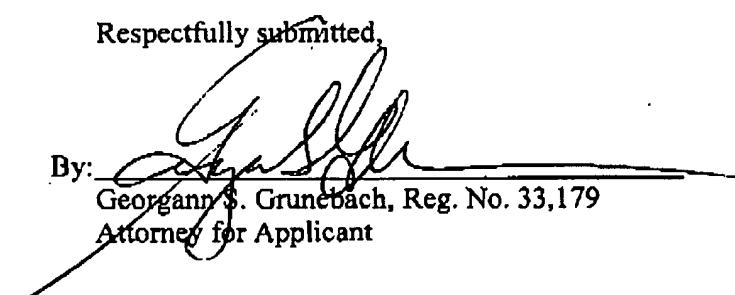
Dated: January 3, 2007   By: _____
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